

purposes of trade, that many a trader not worth a shilling, will involve himself to the extent of several hundreds of pounds in putting in a breast-comer, and destroying all the stability of a good house, for the reinstatement of the damage to which he would be unable to pay.

Besides the shrinkage and deflexure of wood breast-summors, their liability to rot and to burn must be added; and if they be made of cast-iron, though they will not shrink or rot, yet when fire happens, they are (though said to be fire-proof) still more disastrous and less certain than those which are of wood.

Breast-samplers of stone could hardly under any circumstances be relied upon.

The growth of the evil admission of breast-summerners, of wood or of iron, has even lately extended largely into public buildings; hence we see the backs of porticos, raised upon high basements, fractured and sighing; and we observe them in many other situations, where a Wreo, or other constructor who never lost sight of science, would have shuddered to use them.

The inconveniences resulting from the fracture of brickwork or breast-summers, for long while caused the author very serious trouble: in all the examples where he used them, he had the timber chambered consider- ably, so as to counteract any of the effects of ordinary moking; but this did not prevent fracture of the walling over the ends of the timber: it was a long while before it occurred to him, that this destructive effect was caused almost wholly by the shrinkage of the timber.

In forty instances where he used timber window-heads over the windows of printing-offices and manufactories, he found thirty-two instances of fracture: but in all these instances the posts between the windows were framed in one length from one window-head to another, and were braced or trussed between, so that though the brickwork became fractured outwardly, after the flaws were carefully stopped, no further incurrence was suffered: in some of these instances it is true that the fractures were scarcely discernible; but the authors have seen lists of heavy timber window-heads tier above tier, which have collectively so shrunk, that the brick work over the upper window-heads sank and fractured two or a half inch.

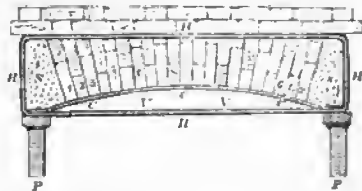
Influenced by the injury and disfigurement caused to brickwork by the shrinkage of breast - summers, the author has lately thought of a method of counteracting it: it is simply to slant off the ends of a timber breast-summer or a window-head, much as the quantity of which may be expected to shrink; and to place a plate of wrought-iron (or several bars of wrought-iron) out of level upon the slanting part of the brick pier at the edge of the brickwork over the dove-head of the same frame as the edge of the timber, that is, on a level for about two or three feet near the ends of the wood.

The object of this seeming malformation is, that when the wood has shrunk to its smallest dimensions, the top of the breast-summer or window-head may be exactly level with the top of the pier; and the iron brickwork will be like a floating bridge with the fall of the tide.

will also become level, leaving a small triangular crevice between it and the end of the timber, which, when shrinkage has ceased, may be stopped by a wedge: and thus the shrinkage of timber will cause the courses of the brickwork to settle level, instead of causing them to fracture, sink, and become distorted.

But as the author conceives that the use of breast-summers is scarcely honourable to architecture, under any circumstances, and under any form, and of any materials, he recommends the discarding of them altogether upon every pos-

sible occasion; there can rarely be any plea for the use of them besides absolute necessity, or the modern false taste of supporting a heavy upward mass of fabric upon scarcely any thing apparent.



Section.

**Elevation**

P. H. & Co. Story-roots of iron to be first let into the old brick-works

H. Hoop of wrought-iron, welded completely and inserted in the brick-work, no more of the old work being removed than will be sufficient to admit the arm. When the hoop is inserted on one side of the wall, a second similar hoop is to be put out for and inserted on the other side of the wall.

C. &c. Cradle-bore of wrought-iron, which are to be cut out for and inserted within the hoops

6. New back of stone which is next to be inserted within the hoops.

c. Another shro-back of stone which is next to be inserted within the heaps

1, 2, 3, 4, 5, 6, &c. The order in which the old brick-work is to be gradually removed, and to be replaced by a well-bonded arch of brick-work set in Parker's cement.

V. & c. Vacancy which may be eventually left between the hoops and the cradle-horn.

The old work between the story-pools is set to be removed tall after all the other processes are complete.

If this mode be adopted in war work, much of the trouble and caution will be unnecessary.

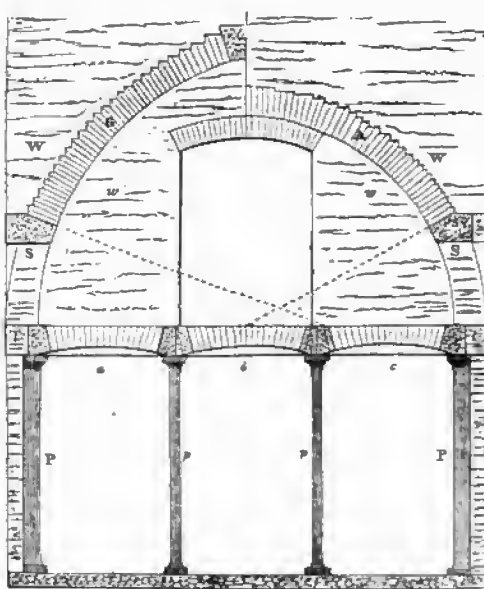
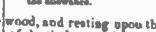
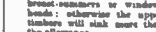
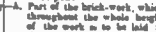
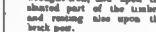
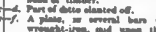
The two halves should be joined over, to prevent corrosion: and must rest the way it said, in order to prevent the two halves from moving further apart.

completely welded together, and be sufficiently strong, and the arch be bonded so closely as to admit of no settlement, neither expansion nor sinking to any sensible degree can take place : this trial proving successful, he has since employed the same means in an old building ; whereby much of the trouble, expense, and inconvenience of shoring were saved. In adopting this method in old buildings, success will

depend upon the care and address with which the work is performed.<sup>9</sup>

The author also suggests the following

\* The author lately adopted this mode immovably as the promoter of Messrs. HURSTON, St. Paul's Churchyard, London; part of a heart-front was to be removed, and though this was so ruinous as to be almost ready to fall, the new work was inserted with only the use of half the usual quantity of boring - and the operation caused no damage whatever to the work above.



**P. P. HARR:** words of iron to be first inserted

3. *s.* Skew-backs of stage 31 to 35 in succession inserted.

A. Arch which is to be formed piecemeal, only a small part of the old work being removed at once

G. Gothic arch, which may on some occasions be preferred to the one last described.

g. g. Minor story, made of stone which can be afterwards incased if necessary.

6. c. Arched work instead of a breast-work as formed as described in § 117.

T. I. Wrought-iron tie, to prevent the arch and the story-posts from expanding